1861MNRAS..22...24.

in Peters' well-known work, *Numerus Constans Nutationis,* &c., Pet. 1842.

They contain for the 25 years to which they relate the logarithms of the quantities A, B, C, D, and the quantity τ for 0^h Pulkova sidereal time of each day. The quantity E, which varies very slowly, is given only for the last day of each month. Besides the logarithms of A, B, C, D, there are given, in the cases where the rapid variation of the logarithms renders it necessary for accuracy, the natural values of B, C, D.

Arc du Meridian de 25° 20′ entre la Danube et la Mer Glaciale, mésuré depuis 1816 *jusqu'en* 1855. Sous la direction de C. de Tenner, Général d'Infanterie de l'Etat-Major Impérial de Russie, Chr. Hansteen, Directeur du Departement Géographique Royal de Norvège, N. H. Selander, Directeur de l'Observatoire Royal de Stockholm, et F. G. W. Struve, Directeur de l'Observatoire-Central-Nicolas de Russie. Ouvrage composé sur les différens Matériaux et rédigé par F. G. W. Struve. Publié par l'Académie des Sciences en St. Pétersbourg. Tome premier, Opérations géodésiques entre le Danube et le Golfe de Finlande, St. Pét. 1860. Tome deuxième, Opérations Géodésiques entre le Golfe de Finlande et la Mer Glaciale. St. Pét. 1857. Deux volumes, 4to. avec Atlas de 26 planches.

The introduction to vol. i. contains the general history of this great geodetical undertaking. The total arc, comprised between Fuglenœs, lat. 70° 40′ (near the North Cape), and Staro-Nekrassowka, lat. 45° 20′ (near the mouth of the Danube), is 25° 20′ in latitude. It is composed of 258 principal triangles, with 10 measured bases, not reckoning among the 258 triangles the triangles which effectuate the junction of the bases with the chain of triangles. The distance between the extreme points, measured on the great circle joining them, is 2700 versts = 2880 kilometers = 1552 geographical miles. The Observatory of Dorpat is about half-way between the extreme points, and may be considered as the meridian of the total arc.

The total arc is divided into two principal portions, a southern and a northern arc, meeting at the Island of Hogland in the Gulf of Finland; in fact, the triangles of the two arcs form two distinct series, having a common point at Mäki-Päälys in Hogland, but without any common side connecting the terminal triangles of the two arcs.

There are on the total arc 13 points where the azimuth and latitude have been astronomically determined. The Observatory of Dorpat is the only point the longitude whereof

1861MNRAS..22...24.

has been determined with eminent precision, by the chronometric comparison in the year 1854, between Dorpat and Pulkova.

In a statistic and chronological point of view, disregarding the observations of latitude which were in part repeated at a posterior epoch; the total arc may be divided into seven parts, which are

Arc of	Between Latitudes.		Measured under direction of	In the Years
	° ′	° ′		
1. Bessarabia	45 20 —	48 15	M. de Tenner	1844–1852
2. Podolia and Volhynia	48 15	52 3	ditto	1835–1840
3. Lithuania	52 3	56 30	ditto	1816–1828
4. Baltic Provinces	56 30	60 5	M. Struve	1816–1831
5. Finland	60 5	65 50	ditto	1830–1851
6. Lapland	65 50	68 54	M. Selander	1845–1852
7. Finmark	68 54	70 40	M. Hansteen	1845–1850

and the history may be divided into four periods, embracing

1. The origin of the undertaking, and the operations of MM. de Tenner and Struve relating to the arcs of Lithuania and the Baltic Provinces, united into a single arc of 8° 2′. The period terminates in 1831.

2. The period 1830 to 1844 comprises the continuation of the meridian northwards to Tornea, latitude 65° 50′, and the preparations for the Southern continuation as far as the Dniester.

3. From 1844 to the end of the year 1851, comprising the continuation southwards to the Danube and northwards to the Arctic Ocean.

4. The supplementary operation posterior in date to 1851, intended partly to reduce to uniformity and a higher degree of perfection the data requisite, as well for the union of the different partial arcs, as for the utilisation of this arc for the determination of the figure of the Earth.

There is given, pp. cxli. to cxliii., a chronological catalogue of the different publications in the *Astronomische Nachrichten*, the *Memoirs* and *Bulletins of the Academy of St. Petersburg* and elsewhere, in relation to the measurement of the arc of 25° 20′.

The astronomically determined latitudes in the Russian-Scandinavian Arc of 25° 40′ are not, as in the English Ordnance Trigonometrical Survey, corrected for the deviations of the plumb-line due to the calculated attractions of the ine-

1861MNRAS..22...26.

qualities of the surface in the neighbourhood of the Station. It appears that in the opinion of General de Schubert, this correction should have been made; and with a view thereto, there should be a careful levelling of all the astronomical stations, or at least of certain specified astronomical stations, on the arc. The question is discussed by M. Otto Struve in a paper in the *Bulletins of the Academy of St. Petersburg* ($\frac{8}{20}$ Feb. 1861), in which he maintains the contrary opinion, that this correction ought not to be made.

Astronomical Observations made at the Observatory of Cambridge. By the Rev. James Challis, M.A. &c. Vol. xix. for the years 1852, 1853, and 1854. 4to. Camb. 1861.

The volume contains the Observations made with the Transit and Mural Circle in the years 1852, 1853, and 1854, the Observations of Planets and Comets with the Northumberland Equatoreal in the same interval being reserved for separate publication with those of preceding years.

The major part of the observations of the three years are directed towards the determination of the places of stars, and more especially such as are included in the list of 8000 zodiacal stars, observations of which were commenced in 1849.

The observations of the Moon and Moon-culminating Stars were discontinued at the end of 1852. The Sun, the Planet *Neptune*, and the Minor Planets, were observed in that and the two following years. All these observations were compared calculated places, and if no Ephemeris was available for the purpose, the places were directly computed from elements of the orbits.

Astronomical and Meteorological Observations made at the Radcliffe Observatory in the year 1858. Under the Superintendence of Manuel J. Johnson, M.A., late Radcliffe Observer. Reduced and Printed under the Superintendence of the Rev. R. Main, M.A., Radcliffe Observer. Vol. xix. Published by order of the Radcliffe Trustees. 8vo. Oxford, 1861.
